Lesson 3 Assignment

Tolerance

Work slowly and carefully. If you are having difficulty, go back and review the appropriate *Lesson*.

For full marks, show all calculations, steps, and/or explain your answers.

Total: 14 marks.

(1) _____ 1. Nominal value is the

A. maximum allowed value
B. minimum allowed value
C. ideal value
D. exact measured value

(1) _____ 2. The tolerance of a measurement of $12.52 \text{ in} \pm 0.3 \text{ in}$ is

A. 0.1 in
B. 0.15 in
C. 0.3 in
D. 0.6 in

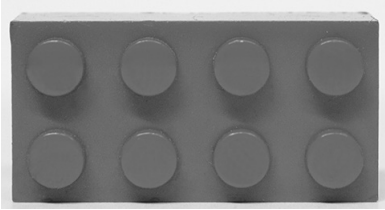
(1) _____ 3. The maximum and minimum allowable values for the measurement of $8.6 \text{ ft} \pm 0.2 \text{ ft}$ are

A. maximum value: 8.8 ft
minimum value: 8.4 ft
B. maximum value: 8.7 ft
minimum value: 8.5 ft
C. maximum value: 9.0 ft
minimum value: 8.2 ft
D. maximum value: 8.65 ft
minimum value: 8.55 ft

(4) 4. The tolerance of a calliper is $0.02\ \text{mm}$.

Write the measurement in two different ways.

(1) 5. The mass of a *Lego*® block is $3.3\,\text{g} \pm 0.1\,\text{g}$.



What are the minimum and maximum masses of the block?

6. A blood glucose meter allows diabetics to check their blood sugar level at home. This blood glucose meter has a tolerance range of ± 1.5 mmol/L. Five blood glucose meters are tested for accuracy with a blood sample that has a glucose (sugar) concentration of 10 mmol/L.

Machine	**Glucose Concentration** (mmol/L)
1	12.0
2	9.5
3	8.6
4	8.3
5	10.2

(1) a. Determine the maximum and minimum acceptable blood glucose concentrations using the blood glucose meter.

(1) b. Which machines fall within the acceptable range?

(2) c. Which machines do not fall within the acceptable range?

(1) d. Why are blood glucose meters used to check diabetics' blood sugar levels at home?

(1) e. Medical clinics have instruments that measure blood glucose levels with a tolerance of 0.2 mmol/L. Why are these instruments not used by diabetics at home?